AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1   1. (Currently amended) A router, comprising:

2   a content addressable memory which stores Internet Protocol address

3   prefixes in an order independent of lengths of the Internet Protocol address

4   prefixes, wherein new entries are stored in the content addressable memory in

5   random order; and

6   an encoder coupled to the content addressable memory which stores a

7   plurality of codes corresponding to the Internet Protocol address prefixes in the

8   content addressable memory, and compares the codes corresponding to matching

9   Internet Protocol address prefixes to find a longest matching Internet Protocol

10   address prefix.

1   2. (Original) The router of claim 1, further comprising:

2   a memory coupled to the encoder, the memory for storing a port number

3   corresponding to each Internet Protocol address prefix in the content addressable

4   memory and other information for routing an incoming Internet Protocol packet.

1   3. (Original) The router for claim 1, wherein the encoder includes circuitry

2   for finding one of the plurality of codes.

1   4. (Original) The router for claim 1, wherein the encoder includes circuitry

2   for deleting one of the plurality of codes.

1   5. (Original) The router of claim 1, wherein each of the plurality of codes
2   indicates a number of relevant bits in the corresponding Internet Protocol address
3   prefix.

1   6. (Original) The router of claim 5, wherein among the codes
2   corresponding to matching Internet Protocol address prefixes, a code indicating a
3   highest number of relevant bits indicates the longest matching Internet Protocol
4   address prefix.

1   7. (Original) The router of claim 5, wherein the code indicates up to 32
2   relevant bits in the corresponding Internet Protocol address prefix.

1   8. (Original) The router of claim 5, wherein the code indicates up to 128
2   relevant bits in the corresponding Internet Protocol address prefix.

1   9. (Currently amended) A method for finding a longest matching prefix for
2   an Internet Protocol address, comprising:
3   storing Internet Protocol address prefixed in a content addressable memory
4   in an order independent of lengths of the Internet Protocol address prefixes,
5   wherein new entries are stored in the content addressable memory in random
6   order; and
7   comparing codes corresponding to matching Internet Protocol address
8   prefixes in an encoder to find a longest matching Internet Protocol address prefix.

1   10. (Original) The method of claim 9, wherein the codes indicate numbers
2   of relevant bits in the corresponding Internet Protocol address prefixes.

1   11. (Original) The method of claim 10, wherein among the codes

2 corresponding to matching Internet Protocol addresses prefixes, the code

3 indicating a highest number of relevant bits indicates the longest matching

4 Internet Protocol address prefix.

1   12-25 (Canceled).

1   26. (Currently amended) A method of operating a router, comprising:

2   receiving Internet Protocol address prefixes, wherein the Internet Protocol

3 address prefixes are stored within a content addressable memory in random order;

4   generating codes corresponding to a number of relevant bits in the Internet

5 Protocol address prefix

6   receiving a packet with a destination Internet Protocol address;

7   comparing the destination Internet Protocol address to the Internet

8 Protocol address prefixes to find the Internet Protocol address prefixes that match

9 the destination Internet Protocol address:

10   comparing the codes corresponding to the matching Internet Protocol

11 address prefixes to find a longest matching Internet Protocol address prefix; and

12   sending the packet to a port corresponding to the longest matching Internet

13 Protocol address prefix.

1   27-30 (Canceled).